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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,099	11/20/2003	Michael Carson	60680-1818	1098

10291 7590 05/17/2006

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EXAMINER

SHARP, JEFFREY ANDREW

ART UNIT	PAPER NUMBER
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3677

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

2

Office Action Summary	Application No. 10/707,099	Applicant(s) CARSON, MICHAEL	
	Examiner Jeffrey Sharp	Art Unit 3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8-12, and 15¹⁴ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12, and 15¹⁴ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

[1] This action is responsive to Applicant's request for continued examination filed on 21 February 2006 with regard to the Official Office action mailed on 16 November 2005.

Status of Claims

[2] Claims 1-5, 8-12, and 15 are pending.

Claim Objections

[3] Claim(s) 9 and 10 were previously objected to because of informalities. Applicant has successfully addressed these issues. Accordingly, the objection(s) to the claim(s) has been withdrawn.

Claim Rejections - 35 USC § 102

[4] The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

[5] Claims 1-5, 11, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Gosling US-2,340,466.

In short, Gosling teaches a piston ring and assembly (refer to figure below) comprising:

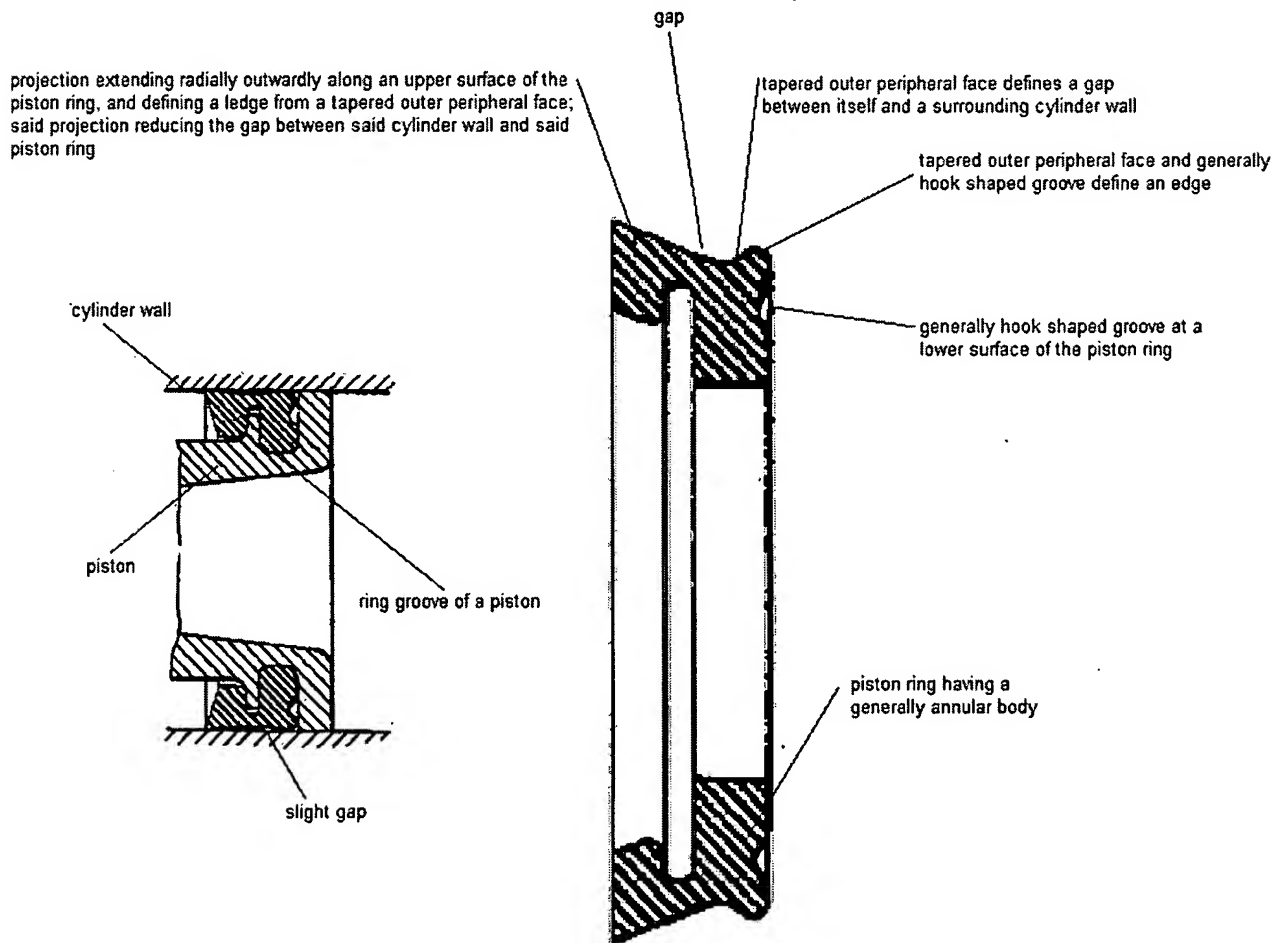
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a piston ring having a generally annular body having a tapered outer peripheral face defining a gap and an edge, a generally hook shaped groove on a lower surface, and a radially outwardly extending projection forming a ledge and being provided at a top surface of said piston ring, wherein said groove also forms said edge;

a piston having a ring groove adapted to receive said piston ring; and

a cylinder wall that receives said piston with said piston ring substantially being positioned between the two.

Applicant is reminded that claims in a pending application should be given their broadest reasonable interpretation. *In re Pearson*, 181 USPQ 641 (CCPA 1974).



Gosling US-2,340,466

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Response to Arguments/Remarks

[6] Claim(s) 1-5, 7, 11, 13, and 15 were previously rejected under 35 U.S.C. 102(b) as being anticipated by Gosling US-2,340,466.

Applicant's arguments/remarks with regard to this reference have been fully considered, but are not persuasive.

Claims 7 and 13 have been cancelled, and therefore all arguments drawn to those claims are moot.

Applicant has amended the foregoing claim(s) such that the Gosling reference still anticipates the limitations disclosed therein.

In lines 18-20 of paragraph [0005], Applicant suggests that "twisting contact" is inherent to piston rings, due to the forces encountered during combustion. Therefore the limitation added to independent claims 1 and 11: "in twisting contact with the inner boundaries of the groove" fails to further define over the prior art in a patentable sense.

Moreover, the amendment to the preamble of claims 1 and 11 merely state an intended use or purpose for the ring, and fail to structurally depart the present device from anticipation by Gosling. Note that it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

In the instant case, the claim is primarily directed to the structure of a piston ring.

Further, claim preamble language may not be treated as a limitation where it merely states an intended use of the system and is unnecessary to define the invention, the U.S. Court of Appeals for the Federal Circuit ruled May 8 (*Catalina Marketing Int'l Inc. v.*

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Coolsavings.com Inc., Fed. Cir., No. 01-1324, 5/8/02). Therefore, the added limitation "for use with an internal combustion engine" has not been deemed necessary to define the invention from the prior art.

Lastly, the amendment to the last portion of claims 1 and 11 indicating the functional language: "said projection reducing exposure of said outer peripheral face to the combustion gasses", has not been given substantial patentable weight, because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35 U.S.C. §112 sixth paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller, 1929 C.C. 172; 388 O.G. 279*.

Should Applicant have any further questions as to the Examiner's reasoning, the Applicant is encouraged to contact the undersigned.

[7] Claim(s) 8-10, 12, and 14 were previously rejected under 35 U.S.C. 103(a) as being obvious over Gosling US-2,340,466 in view of any one of: Norwood US-1,404,540, Norwood US-RE14,969, Moore US-1,471,700, Wilson US-1,534,198, or Norton US-1,586,459.

Applicant's arguments/remarks with regard to this reference have been fully considered, but are moot in view of the following new grounds of rejection necessitated by amendment. Accordingly, this rejection has been withdrawn.

New Grounds of Rejection

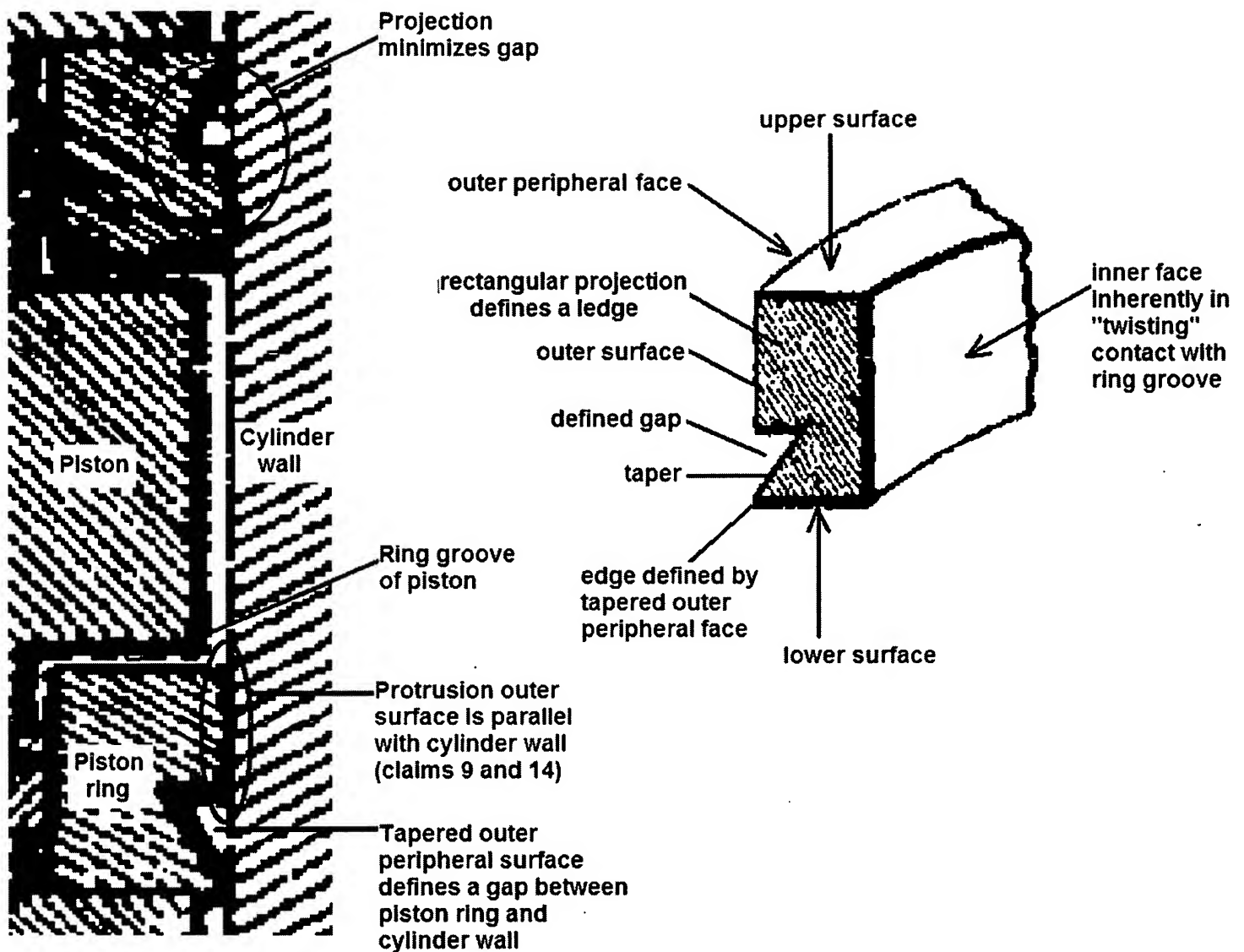
Claim Rejections - 35 USC § 103

[8] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[9] Claims 1-5, 8-12, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norwood US-RE14,969 in view of Applicant's own admission of prior art, and NPL www.Jepistons.com (JE Pro Seal Piston Rings Catalogue).

In short, Norwood teaches each and every structural limitation in claims 1-5, 8-12, 14, and 15, including an intersection of the lower surface and the outer peripheral face defines an edge.



Norwood US-RE14,969

However, Norwood fails to disclose *"a generally hook-shaped groove"* at the lower surface, wherein the *"intersection of the generally hook-shaped groove and the outer peripheral face defines an edge"*.

Applicant admits in the specification (paragraphs [0004] and [0005]) that prior art piston rings (commonly referred to as "Napier" rings) possess hook-shaped grooves

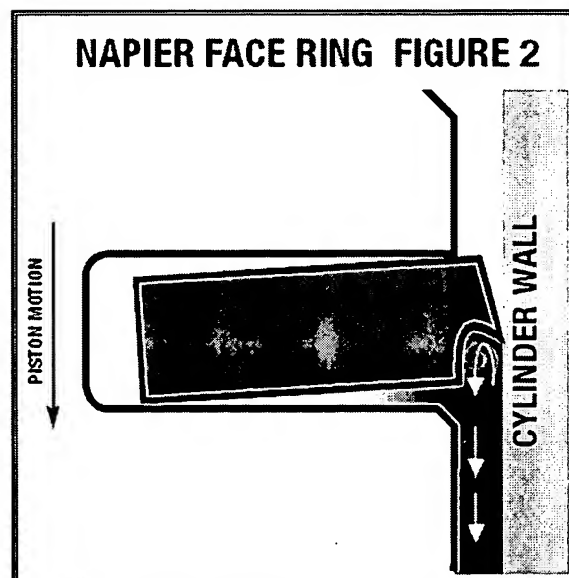
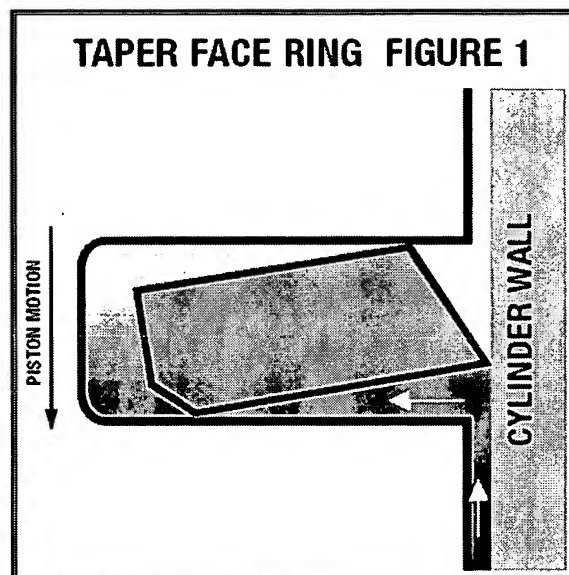
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(labeled in prior art figures 1 and 2 as numeral "14"). The hook-shaped groove, as is known in the art, enhances the sealing properties of the piston ring, as evidenced by NPL www.Jepistons.com, which also teaches the old and well-known advantages of providing a hook-shaped groove to the lower surface of a piston ring. Such a hook-shaped groove: 1) forms a sharp "wiper" edge at the intersection with a tapered outer peripheral face so as to enable a smooth, thin, and even layer of oil between the piston and cylinder wall, and 2) acts to constructively "reverse" the flow of oil, therefore increasing the efficiency of the seal. The NPL further supports Applicant's admission that "twisting contact" between the piston ring groove and the piston ring is "inherent" from the dynamic forces experienced in an internal combustion engine.

SECOND RINGS

The most conventional second ring shape is a taper faced reverse-torsional twist. The tapered face of the ring acts as a wiper that scrapes excess oil from the cylinder wall (fig. 1). It is important to prevent oil from entering the combustion process as this can lead to detonation which in turn increases carbon build up and raises both piston and oil temperatures. The chamfer machined in the back, under-side of the ring produces a twist in the ring, which enhances its cross-sealing properties.

Second rings are also available from JE Pro Seal in the Napier or "hook" style ring face. This design is considered superior to a tapered face design as the hook shape actually channels oil flow back down the cylinder wall and away from the underside of the ring (fig. 2).



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Therefore, at the time of invention, it would have been obvious to one of ordinary skill in the art, to modify the lower surface of the piston ring taught by Norwood, to comprise *a generally hook-shaped groove* defining an edge at an intersection with a tapered outer peripheral face as suggested by Applicant and the old and well-known, in order to increase the efficiency of the seal and to help channel oil back along the cylinder wall.

Conclusion

[10] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

See form PTO-892.

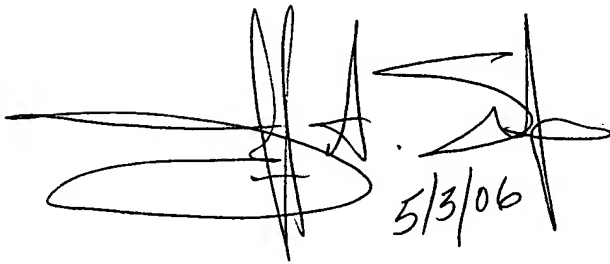
[11] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (571) 272-7074. The examiner can normally be reached 7:00 am - 5:30 pm Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

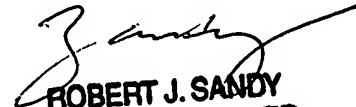
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAS



Handwritten signature and date 5/3/06.



ROBERT J. SANDY
PRIMARY EXAMINER